

## **September – November 2021 Progress Report**

*Submitted December 10, 2021*

*Submitted to:*

*South Dakota Science and Technology Authority Board of Directors*

*Mike Headley*

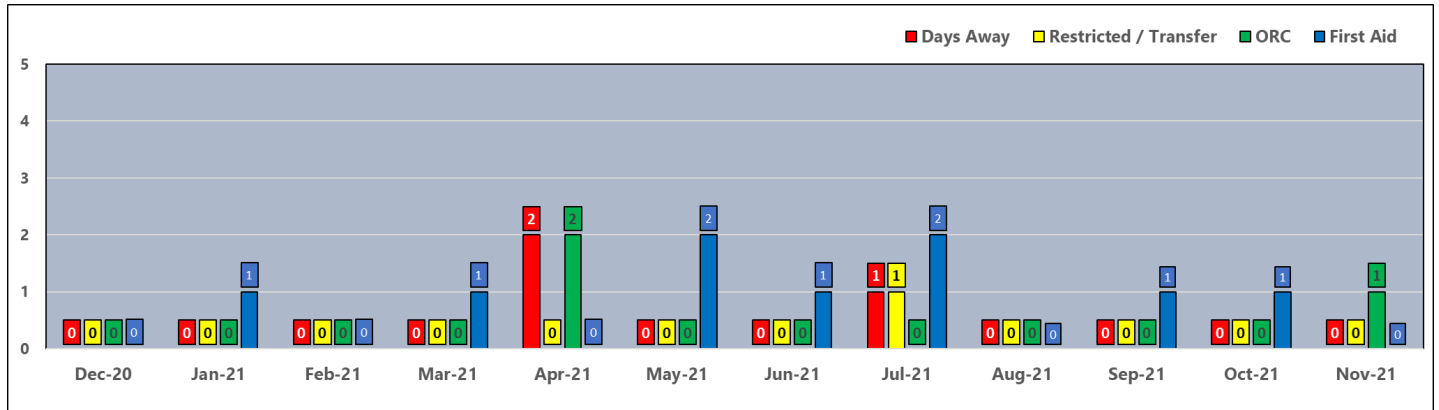
*SDSTA Executive Director*

*Sanford Underground Research Facility Laboratory Director*



## Environment, Safety and Health (ESH) Status

### Health and Safety Status



#### *Other Recordable Cases (ORC)*

#### September thru November 2021: Recordable Cases

- 11/13: SDSTA employee – Other Recordable Case (ORC) ~ Rash/Hives reaction on arms from equipment grease; medical evaluation conducted at medical facility. Prescription medication prescribed by physician and follow up conducted by onsite occupational health nurse.

#### September thru November 2021: First Aid Cases

- 9/30: Researcher ~ Strain to hand; medical evaluation conducted by onsite occupational health nurse. Ice applied.
- 9/30: SDSTA employee ~ Strain to knee; medical evaluation conducted by onsite occupational health nurse. Ice applied and ibuprofen administered.
- 10/12: SDSTA employee ~ Same level fall; medical evaluation conducted by onsite occupational health nurse, bandaid applied.
- 10/19: Researcher ~ Dust in eye; utilized eye flush from first aid kit.

### ESH Support

- New Security Guard hired in October.
- New Training Specialist hired in October.
- New full-time Emergency Response Team (ERT) member hired in November.

#### Work Accomplishments

- ESH Manual updates:
  - Emergency Management Plan – in review
  - Incident Reporting and Investigation – in review
  - Industrial Hygiene – in review
- Human Performance Improvement (HPI) Investigation Reports:
  - Power interruption at Ross Complex
  - Strain to knee
  - Locomotive equipment failure
  - Dust in eye
  - Yates Hoistroom wet ceiling tile fall on equipment
  - Strain to wrist
  - Skin rash to arms
- Assisted with Ventilation Standard and Plan updates – reviewed and approved by Change Control Board (CCB).
- Hosted the Environmental, Safety and Health Advisory Committee (ESHAC) Review, September 29 – October 1.
- Hosted the Alcohol, Tobacco and Firearm (ATF) audit.
- Reviewed the evacuation plans for surface buildings and initiated map revisions.

- Conducted ERT training on confined space rescue, rope rescue response and mobile equipment incident response that was highlighted in *DeepThoughts* newsletter.
- Performed annual audiometric testing for hearing conservation program participants.
- Reviewed build plans, Job Hazard Analysis (JHA) and Critical Lift Permits for the slung loads taking place at the Ross.
- Conducted the third quarter underground emergency evacuation drill.
- Completed Fall Protection Training for 35 personnel.
- Supported the Work Planning and Controls for the LZ xenon condensing process.
- Hosted the Nuclear Regulatory Commission (NRC) onsite inspection, no issues noted. Formal written report pending.
- Updated the ESH Contractor Responsibility contract documents.
- Participated in safety audit walk throughs of LBNF/DUNE leased spaces on the 4850L.
  - Silica exposures and controls
  - Housekeeping
  - Egress maps
  - Communication updates
  - Brass In/Brass Out procedures

#### Upcoming Activities/Trainings

- HAZWOPER Training (December).
- Employee Health Fair with Occupational Health Nurse and ERT staff (December).
- Office of Risk Management Q4 Review (December).

#### Wellness Initiatives

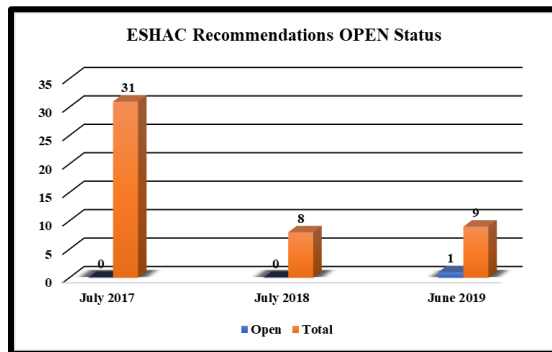
- Successful Breast Cancer Awareness Initiative during October; raised \$6,747 for the local Foundation for Health organization.
- Supported a Kiewit Thanksgiving Food Drive for Lead-Deadwood families. (November)
- December and January initiative preparations in process.

#### Environmental Support

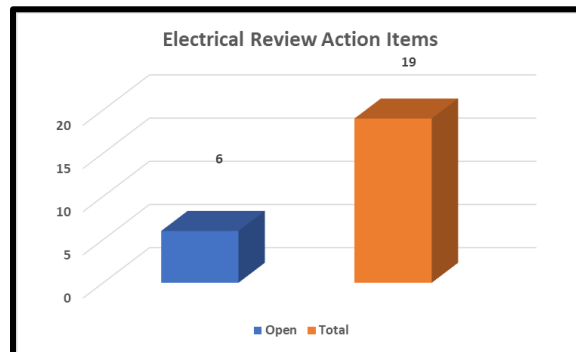
- Submitted bypass request to SD Department of Agriculture & Natural Resources (SD DANR) as part of the Gravity Flow Upgrade Project at the WWTP; received approval and started project.
- Submitted *Renotification of Regulated Hazardous Waste Activity* to SD DANR for Permit No. SDR000213223.
- Submitted *Notice of Termination of Construction Stormwater Permit* to SD DANR associated with construction of Tramway transfer station and overland conveyor to Open Cut.
- Submitted *Notice of Termination of Temporary Discharge Permit* to SD DANR for activities at the Ellison Fan Portal.
- Hosted Veolia Technical Solutions onsite to complete hazardous and solid waste material transfer and disposal activities.
- Hosted Secure Enterprise Asset Management (SEAM) onsite to complete electronic component waste material (e-waste) transfer and disposal activities. There were 5,795 lbs. of material removed from the site, which included data destruction certification on 43 units.
- Hosted Pacific Steel and Recycling for removal of 1,750 lbs. of cardboard, 400 lbs. of white paper, and 400 lbs. of brown paper for recycling.
- Delivered 460 lbs. of plastics and aluminum for recycling to the City of Rapid City's Solid Waste Division recycling facilities.
- Assisted Fermilab in evaluation of emission control measures for material transfer from Tramway to Open Cut.
- Participated in Fermilab Internal Assessment Report for the EMS and Air Emissions Programs of LBNF Far Site.
- Completed Environmental Aspects and Impact Failure Mode Effects Assessment (FMEA) for Environmental Management System.
- Completed Smoke School certification.
- Completed training in the McCoy 5-day Resource Conservation Recovery Act (RCRA) Seminar.

- Managed the removal of asbestos from the pipelines on the Ross trestles. SD DANR Waste Management Program Inspector observed the process.

### Third Party Review Recommendations Status



(\*No ESHAC reviews conducted during 2020)



## Surface and Underground Operations Status

### Yates Shaft

#### Work Accomplishments

- Yates Shaft operating in maintenance mode.
- Shaft crews repaired to set 391, just above the 2600L.
- Return to Operation (RTO) plan finalized.
- Review held with Facility Advisory Committee (FAC) member and shaft specialist to discuss RTO criteria and conduct shaft inspection.
- Yates continuing to support Science with liquid nitrogen (LN) and minimum supplies.

#### Upcoming Activities

- Complete Top Down Maintenance (TDM) through set 405 just below the 2600L and recommission the shaft.
- Complete risk assessment to prioritize next maintenance activities.
- Continue TDM on night shifts.
- Complete Stantek feasibility study for the Yates Shaft.

### Ross Shaft

#### Work Accomplishments

- Ross Shaft continued to support Science five days a week until the Governor's Corner excavation commenced on November 24.
- SDSTA, FRA and TMI worked together to create an approved plan to inspect the excavation area and access the Davis Campus on Wednesdays to support LN deliveries until the Yates Shaft is back in operation.
- Shaft crews are transporting up to 30 bags of shotcrete daily to support both excavation and lining the borehole on the 3650L.
- Saddle bolts identified in the cage compartment were re-torqued; quality data submitted to Tiley.
- Tiley approved the re-torquing data and approved the cage speed of 1,000 fpm for materials only.

#### Upcoming Activities

- Execute plan to re-torque remaining saddle bolts in the skip compartment.
- Install new cage counterweight.
- Install new skip guide runner wheels.
- Perform Tiley accelerometer tests to increase the cage speed for people.

### Hoist Maintenance

#### Work Accomplishments

- Repaired the skip hoist clutch after discovering several broken bolts.

- Received critical spares and catalogued in the Ross Hoistroom.
- Replaced hydraulic brake pump on cage hoist.
- Seimag on site to commission the Ross cage hoist to 1,000 fpm for materials only.
- Spare ore hoist MG set sent for rebuild.

#### Upcoming Activities

- Rope cut for Ross ore hoist.
- Install Oro Hondo fan encoder; contractual language in discussion.
- Perform preventive maintenance activities—ongoing.

### Underground Hazard Mitigation

#### Work Accomplishments

- Crews continued access through the Ross Shaft for Phase #2 of the Water Wall Infrastructure Improvement Project—four walls were completed.
- Began ground support installation in the transportation corridor on the 1700L.
- Installed three ventilation walls in various levels and enhanced ventilation controls on the 5000L.
- Demobilized the drill rig on the 4100L for SIGMA-V and RESPEC.
- Continued installing ground support and installing base course on the 4100L.

#### Upcoming Activities

- Continue Phase #2 of the Water Wall Infrastructure Improvement Project.
- Continue ground support installation in the 1700L transportation corridor.
- Install on-demand regulator at the 2000L Oro Hondo bulkhead.
- Continue advancing the SIGMA-V project and installing ground support on the 4100L.

### Surface Operations and Utilities Support

#### Davis and Ross Campus

#### Work Accomplishments

- Quarterly air handling equipment and fire alarm preventive maintenance activities continued with vendors.
- Oxygen monitors in the Davis Campus have been calibrated and some replaced to ensure any low oxygen events are detected and alarm notifications are sounded.
- Accommodations and equipment have been added to the common corridor enabling the area to be used as a refuge chamber.

#### Upcoming Activities

- Continue support of increased LZ outfitting.
- Continue support of SIGMA-V outfitting on the 4100L.
- Continue support of RESPEC activities on the 4100L.

### Surface Facilities/Buildings and Grounds

#### Work Accomplishments

- The SDSTA completed all seven (7) day, thirty (30) day, and annual (360) day preventative maintenance activities. Boart drill and jackleg repairs continue.
- In support of SURF recycling efforts, 1,800 pounds of spent batteries were gathered along with 19 gaylords of material and 7,000 pounds of electronic equipment/parts were shipped off site. An additional 22 gaylords were filled with recycle material.
- Support of the upgrades to the Ross Hoists continued.
- Storm water discharge areas throughout the site were inspected and repaired.
- To date 2,398 items have been added as “assets” into ManagerPlus, the asset management system.
- A new shaft compressor unit was installed on the North side of the Ross Headframe for redundancy to the air supply in the shaft and various levels.

## Upcoming Activities

- Perform preventive maintenance activities—ongoing.
- Assist with logistics associated with sitewide security upgrades.
- Prepare for winter operations.
- Continue with weekly training for employees sitewide on ManagerPlus.

## Dewatering

### Work Accomplishments

- Performed preventative maintenance on pumps and pumping apparatus.
- Completed installation of the air lines to three new refuge chambers on the 1250L, 2450L and 5000L; monitoring continues.
- Completed work with ERT to install a purge two-inch airline to the 4850L Refuge Chamber anti-chamber.

### Upcoming Activities

- Work with the Engineering Team on the 3650L Pump Room and Pump Replacement Project.
- Schedule preventative maintenance.
- Complete installation of Yates sump pump vertical discharge line.
- Continue to assist FRA/KAJV/TMI with relocation and temporary installation of water and air lines.

## Waste Water Treatment Plant (WWTP)

### Work Accomplishments

- As of December 1, the water level in the underground pool was at 6,111 feet. This is the deepest the pool has ever been pumped down since the re-opening of the facility. Underground water infiltration maintains at approximately 220 gallons per minute (gpm). A large portion of the infiltration was captured on the 2000L and pumped to the surface thereby reducing the amount of water that normally would report to the deep underground pool.
- Modifications to the control system to allow specific functions to be operated from off-site advanced as planned—there were six off hour call-outs for the quarter. The WWTP has not discharged any water to the sanitary sewer for over four years. The team continues to balance water sources to manage temperatures.
- The team worked in cooperation with Barrick to plan for winter operations.
- The WWTP team fabricated and installed an additional filter to pre-clean the water collected from ground infiltration and backwash water from existing filters. This has exceeded expectations and this water is being recirculated into the WWTP with positive effects.

### Upcoming Activities

- Continue to monitor and sample the underground wastewater treatment plant located on the 4850L.
- Continue to prepare for winter operations.
- Prepare for Gravity Inflow Project.
- Enhanced turbidity in the underground water has increased the number of backwashes in the Yardney filters to twice daily.

## Transportation and Mobile Equipment

### Work Accomplishments

- The team performed vehicle preventative maintenance actions and repairs to fleet vehicles.
- Underground locomotives, support equipment including air compressors, loaders and rail cars were maintained.
- Summer maintenance equipment was inspected.

### Upcoming Activities

- Continue repairs on the walk behind skid steers and two-yards loader located on the 1700L and 4850L.
- Prepare snow removal equipment.
- Monitor the Ingersoll Rand air compressor at the Ross Headframe.

## Electrical and Cyber Infrastructure

### Work Accomplishments

- The team continues to review and modify the underground communications infrastructure to ensure each level has voice over IP (VoIP) and FEMCO (i.e. twisted pair) phones at each underground facility level.
- Continued camera replacements to the pump rooms and the WWTP.
- Continued to assist with the Oro Hondo variable frequency drive troubleshooting.
- Various preventative maintenance activities were performed.
- The team continued to work with KAJV to establish construction power on the 4850L near the Ross Station as well as other levels.
- Upgrades to the Yates 4100L and 1700L stations continued.

### Upcoming Activities

- Replace and install additional fiber optic cable in the Ross and Yates Shafts on the 800L, 1700L and 4100L.

## Engineering Support

### Work Accomplishments

- The 5000L Pump Room ventilation was improved by eliminating auxiliary fan recirculation and created a force through system to reduce fire hazard and the ability to help cool the sump water.
- A contract was awarded for the design and construction of an upgraded Oro Hondo Backup Fan. This design-build project includes the purchase and installation of a new 100% capacity backup underground ventilation fan and electrical infrastructure upgrades required to support the new and existing fans.
- Analysis was completed on procuring a Compact Heavy Duty Load Carrier. This new vehicle will support pumphouse rehabilitation and eliminate the need to rehabilitate thousands of feet of rail to the pumphouses.
- Escape route/emergency maps were completed for the ROC, E&O and Administration buildings, and new emergency response plan maps for all accessible underground levels.
- Scans of the 1700L final LHD shop and Motor Barn locations were completed.
- The design of the East Switchyard Cable Replacement was awarded and kickoff completed.
- The 100% design submission was received from West Plains Engineering for the first phase of the new SURF access control system. The construction Request for Proposal (RFP) was issued, site visits held with proposals due this month.
- Construction started in November on the WWTP Gravity Flow project. The Yardney bypass is complete. Crews are working on the corroded pipe replacement in the Sand Filter Building.
- The Yates Shaft Rehabilitation Feasibility Study consultant submitted the 60% study submittal for review and comment. A virtual 60% Design Review meeting was held on December 8.
- Ross/Yates Hoist Room Building Roof Drains & Re-Pointing project technical review package was completed and submitted for DOE. RFP documentation is being assembled for solicitation for construction this summer.
- The Ross/Yates Headframe Security Upgrades project was completed in early November 2021. This project replaced all personnel and overhead doors and established the backbone for a new SURF Security Access system.
- The SURF 4850L Laboratory Expansion Feasibility study consultant has delivered the pre-final study results this month for final review and comment.
- The WWTP Rotating Biological Contractor replacement study task order was awarded to TSP/Banner Engineering—Project complete with 95% submittal reviewed and comments returned to Banner.
- Yates Complex Waterline Replacement project is approximately 80% complete.
- An architecture/engineering (A/E) study to assess the feasibility of reestablishing a Kirk Canyon Access Road was completed.
- A task order was awarded for an A/E firm to perform a condition assessment of SURF's medium-voltage power distribution system and develop plans for recapitalizing and maintaining the system.
- A site-wide lightning risk assessment study was conducted on all facilities in accordance with NFPA 780.



## **Quality Assurance / Quality Control Status**

### **Work Accomplishments**

- Released QA-QC-(1000-S)-176565 Document Change Control Standard Training
- Released ISO Section #4 Context of the Organization Training
- Change Control Request Submittals and Approvals:

<b>Change Control Request (CCR) Submittal</b>	<b>Approval Date</b>
No. 502	09/27/21
No. 503	09/09/21
No. 504	09/27/21
No. 505	09/09/21
No. 506	09/27/21
No. 507	10/19/21
No. 508	10/19/21
No. 509	10/06/21
No. 510	10/19/21
No. 511	11/02/21

- Link to Integrated Management System collection has been created on DocuShare's home page and is active.
- Environmental Aspects-Impacts Failure Mode Effects and Analysis (FEMA) (Type of Record) has been completed to support IMSM-(R-600)-181255 Environmental Aspects Log and to further support IMSM-(R-610)-181647 Context of the Organization (COTO) Log.
- Quality Reports
  - QC-0273 Ross-Yates Headframe Security Project
  - QC-0282 Ross Shaft-Broke Bolt on Saddle #4 on Set #165
  - QC-0283 Ross Shaft-Pulled out Bolt on Saddle #4 on Set #297
- Supporting ISO certification IMSM documentation is 90% complete (Documentation Only).

### **Upcoming Activities**

- Continue to prepare supporting ISO certification documentation for Stage One ISO Audit (May 4-5, 2022)
  - Section #8 (8.2) – Requirements for product and services (P-820)
  - Section #8 (8.3) – Design and development of products and services (P-830)
  - Section #8 (8.4) – Control of externally provided processes, products, and services (P-840)
  - Section #8 (8.5) – Product and Service Provision (P-851)
  - Section #8 (8.25) – Emergency Preparedness and Response (P-825)
- Projects
  - Access Control Project (Phase I)
  - 3650L Pump Room Rehabilitation Project
  - Water line Installation Yates Complex Project
  - Oro Hondo Fan Project
  - Water Inflow System Replacement (Phase II) Project
  - WWTP Gravity Flow upgrades Project
  - Ross/Yates Hoist Rooms roof drains, tuckpointing Project
  - Completion of Saddle No's: 1, 2, 5, 6 and 7 Torquing

## **Science Support Status**

- The SURF Science Program Advisory Committee (SPAC) membership has been finalized, and a kickoff meeting was held. The first formal meeting is being planned for January (virtual).
- The SURF User Association successfully hosted the Long-Term Vision Workshop (18 talks, 9 hours of presentations and discussions with 88 participants) and the Annual General Users meeting (18 talks, 8 hours of presentations and discussions with 49 participants). Nominations are being gathered for the Executive Committee election planned for December (terms expire for four members, including the Chair). An Executive Committee subcommittee was formed to review the process for expanding User membership.

- Science Department personnel supported various presentations: Dark Matter Day (virtual), the 106<sup>th</sup> Annual Meeting of the South Dakota Academy of Science (virtual), and Black Hills State University. A proceedings write-up was submitted for the TAUP2021 conference held in August/September.
- Two new SDSTA Experiment Support Scientists (supported by LZ) start January 10. Duties for a temporary Experiment Support Technician (also supported by LZ) were completed, and the position was terminated.
- Facility highlights: Variable frequency drives (VFDs) were installed on some sump pumps to minimize a source of electronic noise for experiments operating at the Davis Campus. Davis Campus Refuge Chamber preparations are complete (air line from surface as well as provisions such as CO scrubber curtains, bottled O<sub>2</sub>, food, water, and door sealing kits); the Davis Campus Refuge Chamber will support activities once the Yates Shaft returns to normal operations and access across the 4850L is further restricted due to LBNF construction.
- Interruptions: Access via the Ross Shaft continues on a non-interference basis with LBNF construction. Extra-long shifts ended (753 person shifts spanning 76 days during period July 27 through November 23, 2021) once excavation started at 4850L Governor's and the South Drift, with additional constraints limiting access to the Davis Campus to one 4-hour shift per week until the Yates Shaft is returned to operation in December. All Davis Campus groups were affected by an October snowstorm that resulted in restricted access for 1+ days and the most significant impact to power in the nearly 10 years of operation of the underground laboratory. In the past quarter, there were also a few issues with the Davis Campus HVAC system (no major impacts).

## **LUX-ZEPLIN—LZ**

- Condensing was completed for the ~10-tonne xenon mass.
- Xenon circulation has been running in the nominal configuration since mid-November. Ongoing sampling indicates xenon purity sufficient for production data taking (~100 ppq Kr). The ability to conduct remote sampling operations was established prior to the period of limited access starting in late November.
- SURF authorized use of the Deuterium-Deuterium (D-D) neutron generator (both direct and reflector modes) as well as a new custom yttrium-beryllium (YBe) photoneutron source developed by Lawrence Berkeley National Lab (LBNL), supporting an intense calibration campaign leading up to the period of restricted Davis Campus access.
- Following commissioning in September, the high voltage cathode and upper grid performance was sufficient to observe physics S1/S2 signals in the detector. However, additional commissioning is required due to recent instabilities.
- Both cryocoolers (main and backup) that perform detector cooling require repairs. Technicians from the Dutch vendor are now scheduled for early in the new year (re-scheduled from late November).
- Data taking is underway during the limited-access period. (Note that any significant changes to the detector high voltage settings would require an extensive calibration campaign not supported by the current access.)

## **MAJORANA DEMONSTRATOR—MJD**

- Following power interruptions associated with the October storm (and a vacuum pump failure that prevented re-biasing), the germanium array was back online in early November. Electroforming activities were also interrupted, and operation resumed within a week.
- Copper electroforming activities continue—a mandrel with Cu growth was removed and a new one set, Cu nuggets were added to some baths, and processing of an electrowinning batch is underway at the surface WWTP.
- Copper machining resumed in September, including removing Cu from mandrels (four in queue) as well as plate fabrication.
- SURF purchased hardware to double the Davis Campus liquid nitrogen storage capacity, and several weeks of testing was completed in preparation for access restrictions due to LBNF construction. SURF completed an oxygen deficiency hazard (ODH) analysis for the new configuration (remains class 1). Programming adjustments were made to the control system following minor issues noted toward the end of the first period of limited access.
- Some equipment is arriving at SURF to support future Ta-180m efforts.
- At the conclusion of the Double-Beta Decay Summit in early October, there was an agreement (in principle) for one ton-scale experiment in each of North America and Europe (nEXO and LEGEND-1000) plus smaller experiments in Europe. Leading up to the summit, LEGEND received top marks during a DOE portfolio review.

## Low-Background Counting

Black Hills State University Underground Campus—BHUC:

- Sample counting continues. One cryocooler did not re-start after the October power outage and needed to be topped up with liquid nitrogen. BHSU and SDSTA personnel continue with sample swaps, data analysis and LN support.
- With hardware complete, the main boiloff nitrogen supply for the low-background counters is now located outside the Davis Campus clean space, streamlining logistics associated with swapping dewars. SURF completed an ODH analysis and with the installation of some additional valves two dewars are now supported at class zero.
- The Ge-IV detector returned from the vendor in October, but performance tests at SURF were unsuccessful so it was shipped back (again). Issues have been identified at the vendor, and the detector is expected to return to SURF in the new year. Re-designed lifting equipment arrived at SURF from the University of Alabama.
- The Lawrence Livermore National Lab (LLNL) detector arrived at SURF in November and was transported underground to the Davis Campus. Personnel are now planning a trip in February to complete the installation due to limited access.
- Some equipment was retrieved from the Ross Campus BHUC cleanroom (mostly to support LZ).

## SIGMA-V

- Drill core from some 4100L holes was laid out and examined in the surface ROC warehouse.
- Some onsite activities were aborted due to COVID cases and concerns, and the project held a safety standdown to review and address the issues.
- The experiment planning statement (EPS) was signed, and the associated authorization was issued by SURF for the characterization phase of activities on the 4100L.
- A laser scan and survey were conducted on the 4100L. Laser scan data were added to the SURF database.
- Large shipments of equipment from several national laboratories (Pacific Northwest National Lab, Sandia National Laboratories and LBNL) were received at SURF. With significant effort (including weekends) and shaft logistics, all major stimulation/flow equipment is underground and installed.
- SURF is reviewing the EPS for the main experiment phase of the project (stimulation/flow) as well as a waiver request for low smoke zero halogen optical fiber cables.
- Assembly and testing were completed for a probe (DORSA) that will measure real-time fracture displacement.

## Compact Accelerator System for Performing Astrophysical Research—CASPAR

- Monthly calls continue to provide updates on future site characterization plans and scientific publications.

## Other Current Research Activities

### Geology

- Dakota Territory Resource Corporation: Small teams of geologists continue to access the surface Core Archive.
- Black Hills Seismic: A December installation is planned for an instrument on the 4100L to image the crust/mantle.
- 3D Distributed Acoustic Sensing: Discussions are currently focused on deploying 3000 m of optical fiber in a ramp section between 4550L and 4850L.

### Engineering

- Thermal Breakout: Two holes were drilled on the 4100L (one vertical, one horizontal) and reamed (23 m long x 6" diameter); a third hole was not feasible given slow progress with reaming. Televiewing was performed in the vertical drill hole. A geophone was installed to collect background (i.e., LBNF blasting) data.
- Shotcrete: SURF performed a surface laser scan for fiber-reinforced shotcrete applied in 2017.
- GEOX<sup>TM</sup>: Airflow monitoring equipment was relocated on the 4850L.
- Autonomous Unmanned Aerial Vehicle: Following initial tests on the 4100L and 300L, a successful flight was conducted in the ramp between 1550L and 1700L. The goal is to explore emergency response applications.
- Post-Blasting Monitoring: Equipment is expected to be installed in early December, in time for the LBNF North Cavern excavation

## **Quarterly Work Plan Variances**

- The Quarter (September - November) shows an overall overrun of \$236,862. While performance was over budget for the quarter, an overall underrun of \$954,793 remains for the SURF Operations Cooperative Agreement.
- Labor for the three months shows an underrun of \$270,569. This underrun is due in part to some open positions not being backfilled until just recently. Furthermore, SDSTA will be back on track as December is a three-payroll month.
- Nonlabor for the three months shows an overrun of \$507,431. This overrun was due to the arrival of various Ross hoist spare equipment from the FY21 Underrun Spend Plan as well as wire hoist rope being received but being budgeted in an earlier month. Additional work completed on the Yates Shaft Concept Study added to this overrun. All items are on the FY21 Underrun Spend Plan—Included are purchases of supplies for the Yates Shaft Utility top-down maintenance project.

## **Financial Status**

Included in the Financial Report are the following:

- Cooperative Agreement SURF Services FY2022 (federal fiscal year) SPA Curve as of November 2021 (included as Appendix A at the end of the report)
- Financial Summary (included as Appendix B at the end of the report)
  - 1) Balance Sheet as of November 2021
  - 2) Comprehensive Statement of Income November 2021
  - 3) Comparative Balance Sheet – November 2021 vs. November 2020
  - 4) Comparative Statement of Income – November 2021 vs. November 2020
  - 5) Available Resources as of November 2021
  - 6) Operating Budget Summary

### **Cooperative Agreement (CA) SURF Services FY2022 Scheduled Performed Actual (SPA) Curve**

- The SPA curve presented in Appendix A provides a summary of the CA-SURF Services Award No. DE-SC0020216 scheduled financial performance compared to the actual costs. The report shows funding through September 2022 along with information related to Funded-to-Date dollars, Scheduled dollars, and Actual dollars by month. Actual dollars represent actual invoices for the months sent to the DOE Office of Science for reimbursement. For November, the invoices totaled \$1,989,203 which is lower than the anticipated reimbursements of \$2,095,029 by \$105,826. Cumulative expenses are at \$47,657,733 which is lower than the budgeted \$48,612,526 by \$954,793. SDSTA is on track for the large projects, purchasing and hiring.

### **Balance Sheet Items**

- Cash in Local Checking—Total on hand November 2021 was \$5,830,998; up from last month by \$259,931. Funds on hand were necessary to pay employee medical/life/vision insurance due December 1. The balance also contains funds received from federal contracts late in the month on open accounts receivable.
- Cash with State Treasurer—Total balance of \$11,200,153. This balance remains the same from last month.
- Billed Accounts Receivable (A/R)—Billed A/R represents any open invoices based on contracts from sources such as the DOE Office of Science, LBNL, Fermilab, other smaller contracts from other universities/private entities, and Barrick-Homestake Mining Company. Total is at \$2,192,785; up from last month by \$167,556. Included in the balance are open invoices to LBNL for \$249,240, representing invoices for the LUX-ZEPLIN (LZ) experiment support contract and the SIGMA-V experiment support. Additional open invoices include \$487,938 from Fermilab primarily from the SURF Services subcontract and a contract for Ross Shaft Logistics Support. Furthermore, the open balance from the Cooperative Agreement is at \$1,427,685. Additionally, there are open invoices for \$5,606 from small university subcontracts, and \$22,316 from Barrick/Homestake, Dakota Territory Resources Corp (DTRC), and Thyssen Mining Inc (TMI).
- Unbilled A/R—Balance at \$808,110. Unbilled A/R represents items that have not been billed on various contracts. November's balance has decreased by \$155,599. The payroll from pay end date November 26, 2021 (paid on December 3, 2021) was not invoiced in November on various contracts. The amounts will be invoiced in December.

- Other A/R—Current balance of \$261,200. This balance represents any Interest Receivable and Miscellaneous Accounts Receivable. The balance increased by \$8,640. Activity for this month includes recording the interest accrual for November.
- Inventory/Supplies—Balance at \$3,166,194, for fixed assets being stored but not in service. This balance has decreased by \$191,919 due to transferring the balance of the warehouse inventory purchased with federal funds to a separate account. Yet, we did increase the balance for the purchase of Ross hoist spares with a value of \$40,801.
- Inventory Warehouse/Personal Protective Equipment (PPE)—Current balance of \$258,766. This balance represents the warehouse inventory that was purchased by SDSTA prior to federal funding as well as the warehouse inventory purchased with federal funds. The balance has increased by \$232,662 due to transferring the balance out of the Inventory/Supplies account for the warehouse inventory purchased with federal funds. Both warehouse inventories have separate account balances that are traced. Yet they are summarized on the balance sheet under one category.
- Other Current Assets—This listing on the balance sheet represents the balances of both prepaid insurance—\$409,123 and prepaid other—\$175,361. Total balance of \$584,484 is higher from last month by \$42,287. This increase includes renewing our cyber security insurance along with our monthly insurance expense and the difference in various prepaid items in November.
- Fixed Assets—Current balance of \$85,483,179. Fixed assets activity since last month includes recording the receipt on the Cooperative Agreement of various headframe project doors - \$117,000 as well as recording the finalization of the Ross Complex waterline - \$1,422,289 and the Yates Hoist MG set refurbishment - \$681,816. Decreases include retiring of a JD angle broom and a hydraulic drill. The net increase of \$460,893 since last month includes depreciation on SDSTA fixed assets. Depreciation for the DOE Property Transfer items is separated as this amount will not be included in our indirect cost recovery on contracts.
- Pension Deferred Outflows—This designation on our Balance Sheet reflects the requirements related to the Governmental Accounting Standards Board (GASB) No. 68 and No. 71 in reference to pensions. SDSTA is required to report the net pension asset or liability on the face of our financials along with related deferred inflows and outflows. The State's retirement system is now fully funded. The Net Pension Asset is a restricted asset. Thus, the equity created is also restricted. The balance Pension Deferred Outflows shown as a noncurrent asset is \$4,135,812 created by FY2021 final entries. The balance has increased from the previous year by \$1,139,997.
- Xenon Purchased—Balance of \$8,934,350 represents the value of xenon purchased for use by experiments. The xenon inventory is considered a non-current asset and includes all the purchases through fiscal year 2020. The processed xenon has all been shipped from Stanford University to SDSTA for use in the LZ experiment. It is now in their closed loop system.
- Total Assets—Total of \$122,856,031. This balance has increased from last month by \$824,450 which represents the net activity as listed above.
- Accounts Payable—Our Total Accounts Payable balance of \$1,407,165 at the end of the month compared to last month has increased by \$173,003. This is primarily due to an invoice received on the Yates Complex waterline from RCS Construction. This project is on target to be completed in early spring 2022.
- Accrued Payroll Liabilities—Current balance of \$2,354,886 has increased slightly by \$52,176 from last month. This represents the net change between earned vacation and vacation taken and other changes in employee benefit-related liabilities. Also included is the accrued payroll from November 26 that was paid in December.
- Long Term Xenon Notes Payable—This designation represents \$2M of funding received from the South Dakota Community Foundation, \$2M received from the University of South Dakota Foundation, and \$2M received from the South Dakota State University Foundation. The \$6,000,000 balance was designated for purchasing xenon for experiment use at SURF. The balance is unchanged from last month.
- Pension Deferred Inflows—This classification reflects the requirements of GASB No. 68 and No. 71, as discussed earlier. The balance of \$3,467,899 represents our portion of the difference between projected and actual earnings on pension plan investments with the South Dakota Retirement System.
- Total Liabilities—Total Liabilities increased by \$225,179 (from \$13,004,771 to \$13,229,949), which reflects the net activity listed above.
- Total Equity—Increase to \$109,626,082 from the previous month \$109,026,810.
- Total Liabilities & Equity—Decrease to \$122,856,031 from the previous month of \$122,031,581.

#### Statement of Income Items

- On the SDSTA's Statement of Income, the DOE Subcontracts are consolidated into one line on the report. Included in this amount are various subcontracts from LBNL, Fermi National Accelerator Laboratory (FNAL),



the Cooperative Agreement with the DOE Office of Science, as well as a small contract for the MAJORANA project with Oak Ridge National Laboratory. Total revenue through November is \$14,474,198 (increase from October of \$3,076,016).

- Interest income recorded for the current fiscal year on State Funds is at \$46,646. This represents interest accruing at 1% on the cash held by the state on behalf of the SDSTA.
- Direct Costs are then listed on the Statement of Income. The classifications for Unallowable Costs and Indirect Costs are listed as well on this report to follow the federal contracting format. Direct Costs/Unallowable Costs are at \$8,493,248 for the current fiscal year. Indirect Costs including fringe benefits are at \$6,520,919. Costs are higher than revenue by \$492,462.
- Other Income is at \$358,384 which primarily represents miscellaneous income received from TMI and small amounts from Barrick.
- Miscellaneous Expenses and Donations is at \$(2,439,923) for current year fixed assets that were purchased on federal funds through the Cooperative Agreement.
- Net gain through November after Reclass Increase in Net Assets is at \$918,439.

### **Comparative Balance Sheet**

- Total in Local Checking is higher by \$2,414,615 due to receiving more funds from contracts in Accounts Receivable when comparing the two-time frames. Payments are being received on the Cooperative Agreement on a much quicker basis than from our other contracts.
- Total Cash with State Treasurer is lower by \$2,905,161 from this time last year as funds have been used for the construction of the ROC along with using Experiment funds for xenon-related expenses.
- Inventory-Supplies is higher by \$462,512 when comparing the two-time frames, due to including equipment purchased on the Cooperative Agreement federal funds that has not been put in service. Also included is the equipment associated with the Ross Cage and Work Deck that were put in storage for possible future use.
- Fixed Assets are higher by \$5,093,383 when comparing the two-time frames, particularly due to including the fixed assets purchased on the Cooperative Agreement federal funds as well as finalizing the Ross Complex waterline and the Yates Hoist MG set refurbishment. Also included is the cost for the ROC building that was completed in June 2021.
- Work in Process has decreased by \$1,795,774 when comparing the two-time frames, as the work performed on building the ROC is complete.
- Pension Deferred Outflows is higher by \$1,139,997 due to fiscal year 2021 entries.
- In summary, Total Assets have increased by \$3,400,021.
- Total Current Liabilities are slightly higher by \$361,527 when comparing the two-time frames. Total Accounts Payable is higher due to an increase in activity on projects, particularly with the Yates Complex waterline.
- Other Liabilities-Pension Deferred Inflows have also increased for fiscal year 2021 entries, an increase of \$2,201,313.
- Total Restricted Funds are lower by \$3,749,933 due to the use of these funds for related expenses.
- Investment in General Fixed Assets has increased by \$5,093,383 for the various additions of fixed assets and projects purchased on federal funds and for the completion of the ROC building funded by State Future Funds.
- Unrestricted Funds are lower by \$506,268 when comparing the two-time frames.
- Total Equity has increased by \$837,182 from this time last year.
- In summary, Total Liabilities & Equity have increased by \$3,400,021.

### **Comparative Profit/Loss**

- Total Revenue for year-to-date November 2021 compared to year-to-date November 2020 has decreased by \$108,401. This slight decrease is due in part to less activity on the LBNL subcontracts. Direct Costs and Indirect Costs for year-to-date November 2021 compared to this time last year show a slight combined increase of \$203,360 (a 1.4 percent increase). Net Income/Loss for the comparative time periods shows a slight decrease in income of \$231,919.

### **Available Resources**

- This report reflects our available cash/accounts receivable after noting the restricted cash balances in the Indemnification, Mine Closure, and Special Session Lab accounts, and funds held for Experiments—interest for investors. This report reflects our available cash and (short term) accounts receivable as compared to our current liabilities including accrued payroll liabilities. \$6,380,488 is available after noting our current obligations. It is

also important to note that our accrued payroll liabilities include accrued vacation and sick pay. Therefore, the report reflects our available resources compared to current obligations.

### **Operating Budget Analysis**

- This report is separated into three sections: SDSTA-funded activities, Federal, State, and Commercial funded activities and Indirect expenses that benefit various activities. Total operating expenses are under budget for November by \$382,839.
- Year-to-date figures are under budget by \$1,106,519.
- With the finalization of the construction for the ROC, we have eliminated the capital expenditure budget all together going into FY2022. Therefore, all expenses related to interest payments to xenon foundation investors will be included in the SDSTA Operating Budget Analysis going forward. The current FY2022 budget includes these expenditures.

### **Human Resources**

There are currently 175 full time employees and 11 temporary staff. New hires for September, October and November include: Senior Contracts Specialist Benjamin Brack, Security Guard Calvin Olson, Hoist Operator Trainee Tyler Schwindt, Infrastructure Technician Rodney Loup, IT Manager Thomas Newman, and ERT Member Mathew Peters. Resignations during the quarter included Technical Writer Caroline Amelse, Infrastructure Technician Daniel Cornelius, IT Manager Robert Brantley, ERT Supervisor/Trainer Henry Charpentier, Safety Specialist James Gregory, and Hoist Operator Cindy McCormick. Engineering Technical Associate Dale Curran transferred to the Surface Operations & Utilities Department as an Industrial Electrician. Current employee Melanie Tollefson was selected for the open Senior Accountant position. Current positions being recruited include: CFO, HR Manager and a Director for the Sanford Lab Homestake Visitor Center (SLHVC).

## **Professional Staff Services - Subcontract No. 607915**



## **Long-Baseline Neutrino Facility (LBNF) and Deep Underground Neutrino Facility (DUNE)**

- The execution of a scaled refuge chamber plan was developed and coordinated for sheltering 20 people for 96 hours in the Davis Campus to support refuge requirements during a 60-day period of no access because of LBNF blasting.
- The Engineering team worked with FRA and Arup/TSP to finalize the design, specifications and scope of work for moving existing Ross Shaft air heater to Yates Headframe and installing new air heater at Ross Headframe.
- The Welded Wire Fabric and rock bolts being installed by TMI are a critical component of the DUNE detector grounding system. The Engineering team worked with FRA and TMI to develop test procedures, evaluation criteria and selection of appropriate test instruments for performing low-resistance ground bond testing.

## **LZ Operations Phase I - Subcontract No. 7525117**

## **Other Experiment Support**

### **LUX-ZEPLIN (LZ)**

- The Engineering team led the development of plans for managing science experiment support for the Davis Campus Limited Access period, working with the SDSTA, LZ, MJD and BHUC teams.
- The final LZ recovery compressor has been moved underground and is in the process of being installed.
- The Stationary Sampling System for xenon purity analysis has been moved underground, installed and commissioned.
- The DD Neutron Generator was moved underground, installed including the manufacturing of new lead shielding, and used successfully for calibration operations.

## **Indirect Funded Activities Status**

## **Contracts Status**

### U.S. Department of Energy (DOE) subcontracts to SDSTA

- SDSTA received Modification No. 15 for the *Ross Shaft Labor Increase*, Modification No. 16 for the *Wastewater Treatment Plant* (IIP), Modification No. 17 for the design work of the *Roof Drains and Brick Work* (IIP), Modification No. 18 for the definitization of the upgraded *Oro Hondo Backup Fan* (IIP), and Modification No. 19 for Incremental Funding.
- SDSTA submitted an updated budget for the Cooperative Agreement (CA) proposal at the DOE's request for *LZ* operations, and also a request for funding for the construction of the *Roof Drains and Brick Work* (IIP).

### Fermi Research Alliance

- SDSTA received Supplemental Agreements (SA) on subcontract No. 674969 *LBNF Logistics Support Services* to add to the scope of work (SA No. 3), revise terms and conditions (SA No. 4), and add incremental funding (SA No. 5).
- SDSTA received Supplemental Agreements (SA No. 2 and No. 3) on subcontract No. 671265 *Professional Staff Services* to add incremental funding.
- SDSTA received Modification No. 23 on subcontract No. 629670 *SURF Services* to add funds.

### Oak Ridge National Laboratory

- No additional actions this period.

### Lawrence Berkeley National Laboratory

- No additional actions this period.

### **Summary of Contracts Awarded by SDSTA in September – November 2021:**

<b>Contract No.</b>	<b>Contractor/Vendor</b>	<b>Type</b>	<b>Project</b>
2020-27	Johnson Controls	CO #1	Davis Campus chiller extra labor
2015-21	Albertson Engineering	CO #23	Extend contract to 9.30.22
2014-27	KT Connections	CO #7	Extend contract to 9.30.22
2015-25	Overhead Door	CO #10	Extend contract to 9.30.22
2015-17	Butler Cat	CO #8	Extend contract to 9.30.22
2021-06	Dialogue	CO #23	Extend contract to 12.30.21
2019-29	CVD	CO #44	Administration Building seal cracks
2021-19	RCS Construction	CO #1	Additional valves that were not in design
2019-28	Jacobs Welding	CO #11	Rebuild fan
2020-16	Western States Fire	CO #5	Service fire extinguisher and purchase four more
2021-11	Kinetic Safety	CO #2	Extend contract to 10.30.21
2019-28	Jacobs Welding	CO #12	Additional platforms for Yates Rehabilitation
2013-39	G.L. Tile	CO #5	Extend contract to 12.31.22
2021-21	Neosystems	New	Consulting contract on Deltek Software
2019-40	Silver State Wire Rope	CO #6	Test the ropes at Yates & Ross shafts
2014-27	KT Connections	CO #8	Extend contract to 9.30.22
2019-28	Jacobs Welding	CO #13	Skip runners
2019-40	Silver State Wire Rope	CO #7	M#30 socket and test
2020-34	Stantec	CO #3	Add additional employees to contract
2021-23	TBD	RFP	Drupel website development and maintenance
2014-19	Jim's Private Utility	CO #7	Extend contract to 9.29.22
2020-07	Ferber Engineering	TSK#4	MV recapitalization program
2019-29	CVD	CO#45	Add rates for snow removal

2019-29	CVD	CO#46	Flap material for Yates and Ross Hoists
2019-29	CVD	CO#47	Ross headframe window repair
2091-29	CVD	CO#48	Storm water channel
2020-30	Fat Boy Consulting	CO#1	Extend and add funds to contract
2021-25	KT Connections	New	Phone Systems
2021-26	Border States	New	MV VFD Programming and encoding
2019-44	Ventilation Innovation	CO#3	Oro Hondo Backup Fan
2014-19	Jim's Private Utility	CO#8	Internal change order to add funds
2019-40	Silver State Wire Rope	CO#8	Changed scope of NDT rope change
2021-04	RCS Construction	CO#2	Guardrail and parking spots
2021-16	Sander Sanitation	CO#1	Add funds and additional scope to contract
2020-22	Mac Construction	CO#4	Extend contract to 12.30.21
2019-29	CVD	CO#49	Replace Administration Building windows
2020-07	Ferber Engineering	TSK#5	Replace cable to East Switchyard
2020-29	Bradleys	CO#2	Extend contract to 12.31.21
2021-06	Dialogue	CO#3	Add scope to contract
2020-31	Science Museum of Minnesota	CO#3	Extend contract to 10.14.21
2021-29	Ed Cumesty	New	Surf Strategic Advisory Committee
2020-38	Designworks	CO#2	Extend contract to 2.28.22
2020-34	Stantec	CO#4	Add employee's rate on Stantec contract
2015-30	Baker Timber Products	CO#7	Extend contract to 12.31.22
2015-29	Amick Sound	CO#9	Extend contract to 12.31.22
2017-37	Hydro Resources	CO#4	Extend contract to 12.31.22
2014-06	Black Hills Physical Therapy	CO#11	Extend contract to 12.31.22
2015-13	Stone Land	CO#13	Extend contract to 12.31.22
2020-07	Ferber		Yates Campus Sidewalk
2021-16	Formations	New	Update Visitor Center Panels

**Purchase Orders (POs):** 588 POs were issued September 1 – November 30 totaling \$938,633.97.

**Warehouse Inventory:** Warehouse inventory as of November 30, 2021 totaled \$282,077.59.

### **Inclusion, Diversity, Equity and Access (IDEA) Status**

- An equity statement has been developed for use by SDSTA.
- The IDEA Office hosted several more trainings for supervisors to discuss topics related to employee voice, including how to be a better listener and effective communication skills in the workplace.
- The SDSTA Dress Code is in the process of being updated to reflect more inclusive language.
- Mike Headley, Deb Wolf and IDEA Lead Rochelle Zens are working on developing a white paper for the Snowmass Particle Physics Community Engagement Frontier Workshop with Fermilab and LBNL.
- The Education and Outreach team is conducting teacher professional development trainings centered on equity.
- The IDEA team hosted the first “coffee break,” to bring staff from across SURF together socially. The break included an informal history of frybread, along with an opportunity for employees to make their own. Coffee breaks are scheduled for each upcoming month. Departments have signed up to host each month.
- Work is ongoing to develop an IDEA webpage that will include demographics and IDEA-related resources.
- The Cultural Advisory Committee meeting was held on November 18. There are 19 recommendations that require responses and action plans across the organization.

## Cultural Liaison Updates

- Continued to participate on the STARBASE Board. Through December, 956 students have graduated from the academies; 498 of the total student population are Native American students.
- Participated in a teleconference with a state official to discuss how to promote SURF internships and Davis-Bahcall opportunities to students across South Dakota.
- Facilitated SURF Cultural Advisory Committee meeting on November 18, 2021.
- Continued discussions with SD Secretary of Tribal Relations Dave Flute to address Indian Education issues that affect students.

## Education and Outreach (E&O) Status

### K-12 Education and Outreach

#### Curriculum units

- Thus far this semester, 27 curriculum units have been utilized in schools in South Dakota (plus one across the border in North Dakota), impacting 1,555 students. The kits have been used in 18 school districts in 16 counties.
- An ongoing effort to increase the use of curriculum units in the early grades (K-2) by offering support and networking with teachers appears to be successful. The number of requests in those grades has increased substantially this year.
- The Established Program to Stimulate Competitive Research (EPSCoR)-developed curriculum units are being finalized, and the E&O team is in the process of handing them off to SD EPSCoR to distribute to teachers.

#### Field trips (onsite)

- K-12 field trips this fall were restricted due to ongoing COVID concerns. Three classes of undergraduate education majors from BHSU were hosted.

#### Classroom presentations (includes virtual field trips)

- With schools re-opening to visitors in many places, E&O staff members trained in September on all of the classroom presentations E&O offers.
- Subsequently, the team has had a full calendar of school presentations this fall, the majority of them face-to-face with students in schools. Some schools are still restricting visitors, and for those the virtual options are available. In September, October and November, schools were visited (either face-to-face or virtually) in 25 South Dakota counties. Physics classes in Minnesota and Melbourne, Australia were also visited virtually.

#### Other K-12 Students

#### The E&O team participated in:

- Science, Technology, Engineering and Math (STEM) Night at Sturgis Elementary School for students in grades 2-4. Students made Markerbots
- The annual 8th grade career fair for Rapid City Area Schools—157 students visited the E&O table over the course of the day.
- Mentoring Spearfish High School students interested in STEM careers.

#### Professional Development (PD)

- Cohort 5 of the SDMath/SDSci Teacher Leaders program had their first weekend workshop in September. 21 teachers joined the program from 14 counties in South Dakota. Several of the new teacher leaders had previous connections to SURF E&O. Three teachers from Isna Wica Owyawa in Oglala participated in our Saturday morning programs for their students last year. Another teacher, from Lakota Tech High School, joined the Quarknet program this summer. And three other teachers are regular attendees at SURF professional development workshops and use the E&O curriculum units regularly.
- A Veterans' retreat for SDMath/SDSci was also held this fall.
- E&O has been contracted to provide monthly 2-hour PD sessions for the Harrisburg School District. These are a mixture of face-to-face and virtual. Three sessions took place this semester; a total of 83 teachers participated.
- Sessions are planned for staff development days at Spearfish and Lead-Deadwood School Districts in January.

- A calendar has been created for all the professional development planned for Summer 2022, and content planning is in progress.

## Undergraduate

- This fall, the E&O teamworked with the new science education faculty member at BHSU, Tim Klavon, to provide an experience at SURF for his three science methods classes. The students experienced a Yates Hoistroom tour and hands-on activity from the lens of student engagement. Two of the classes, one from the Spearfish campus and one from the Rapid City campus, were for future elementary teachers, and one class was for future secondary teachers.
- The E&O team begun effort this fall to expand work with pre-service teacher programs to colleges and universities across the state, working with eight faculty members from different institutions to define what a partnership could look like for their programs. As a result of these efforts, E&O:
  - Participated in a panel discussion with a methods class at SDSU,
  - Scheduled spring sessions to facilitate lessons for classes at Northern State University, Dakota State University and the University of South Dakota, and
  - Began discussions with faculty at Oglala Lakota College but do not yet have a commitment.
- Recruitment is underway for the 2022 SURF Internship and Davis-Bahcall programs. The E&O team interacted with 35 students at the SD Mines virtual career fair to talk about internships.

## Other

- Various members of the team gave talks or workshops this fall to raise awareness among educators, administrators and school boards about our programs. These included:
  - Stanley County School Board – 27 school board members, educators and public
  - Associated School Boards of South Dakota – 21 school board members
  - Indian Education Summit (two presentations) – 16 administrators
  - Astronomical Society of the Pacific – 13 educators
- The E&O team presented our *Water: Where does It Go?* Activity for members of the general public attending the expo associated with the Buffalo Roundup in Custer.
- The E&O team gave an interactive session about outreach related to dark matter (curriculum unit and presentation) at the Astronomical Society of the Pacific annual meeting.

**Table 2. Student/Educator Impact (September – November 2021)**

Bucket of Work	No. of Programs	No. of School Districts	No. of Schools	K-12 Students	K-12 Educators	Undergrad Students
Curriculum Units	28	18	27	1,555	32	0
Onsite Field Trips	4	1	2	0	4	69
Presentations	175	37	58	6,199	236	19
Other K-12	3	3	7	260	9	0
Professional Development	5	26	N/A	0	120	0



## **Communications Status**

- Communications assisted the SURF Foundation in developing the Sacred Circle Garden fundraising campaign and completed the fundraising page for the project.
- Communications is working with management to update information on Sanford Lab Homestake Visitor Center (SLHVC) web and social media platforms.
- Updates for the SLHVC exhibits have been forwarded to Formations Inc.
- Communications is selecting a vendor to develop a new SURF website that will increase functionality; the contract will include subsites for Education and Outreach, Neutrino Day and the SLHVC.
- Communications completed the departmental Vision/Traction Organizer (V/TO) establishing 1-, 3- and 15-year target goals.
- Communications is leading the strategic marketing effort for SURF and updating the Crisis Communications Plan.
- Communications regularly attends Interactions Collaboration meetings as a way to promote SURF on an international level.
- Communications continues to meet with Fermilab communications and the LBNF/DUNE communications group.

## **Community Outreach/Media/Site Visits/Presentations.**

- Two virtual Deep Talks presentations were given with more than 150 people participating.
  - October: International Dark Matter Day with SDSTA research scientist Markus Horn.
  - November: Having a blast! With Fermilab's James Rickard, who focused on LBNF excavation.
- In October, Artist-in-Residence Leekyung Kang's exhibit was displayed at the Lead-Deadwood Arts Center.
- Communications continues to work with Fermilab and TMI to document progress on underground construction and the Ross Hoistroom.
- Communications Director Constance Walter spoke with several Rotary and Kiwanis clubs in Rapid City, Lead and Sturgis; and presented at the Buffalo Roundup, Friends of Hill City Library and the American Advertising Federation, Black Hills Chapter.
- Constance Walter met with a writing class at SD Mines to discuss interview techniques.
- SURF hosted American Physical Society (APS) students from SD Mines.

## **Upcoming Community Outreach/Media/Site Visits/Presentations**

- Planning for 2022 Neutrino Day is underway; SURF is in negotiations with a high-profile speaker.
- Communications Specialist Erin Broberg presented to a high school freshman speech class; and an international public engagement forum.
- Education & Public Relations Director Deb Wolf presented to USD during a Lunch-and-Learn and met with education faculty members; she also presented at Augustana University.

## **Video, Web, Graphics**

- Communications developed a video to present to the South Dakota Office of Risk Management.
- Communications is developing a year-in-review video.
- Communications continues to create new video and animations to illustrate articles that are used on a variety of platforms, including social media, PowerPoint presentations and the website. Also, fresh content is being created weekly for all social media platforms.
- New features are being created and all experiment pages are being updated for the SURF website.
- Albums in the SURF Photo Gallery may be viewed at: <http://pics.sanfordlab.org>.
- General web maintenance and digital signage content are ongoing; media assistance to science collaborations and educational institutions are ongoing.

Photos of recent events/milestones are included as Appendix C.

## **News Coverage**

- [Peterson's donation pushes Sacred Circle Garden toward fundraising milestone](#), by Erin Lorraine Broberg, Black Hills Pioneer, Nov. 29, 2021.
- [SURF calls for applications for the 2022 Davis-Bahcall Scholars Program](#), Black Hills Pioneer, Nov. 8, 2021.

- [Over a year later, construction continues to progress on PIP-II Cryoplant Building](#), by Lindsey Alexander, Fermilab News, Nov. 8, 2021.
- [“Ongoing Up-ending” exhibit in Lead explores SURF research, projects through art](#), by Christina Holiday, News Center 1, Oct. 18, 2021.
- [SURF looks to the future with input from scientific community](#), by Erin Lorraine Broberg, Black Hills Pioneer, Oct. 14, 2021.
- [Scientists assemble final detector of Fermilab’s Short-Baseline Neutrino Program](#), by Mary Magnuson, Fermilab News, Sept. 30, 2021.
- [Researchers evaluate SURF extremophiles in effort to trap carbon dioxide deep underground](#), by Erin Lorraine Broberg, Black Hills Pioneer, Sept. 13, 2021.
- [Nigel Lockyer to step down as Fermilab director](#), University of Chicago, Sept. 10, 2021.

## **Information Technology Status**

### **Projects**

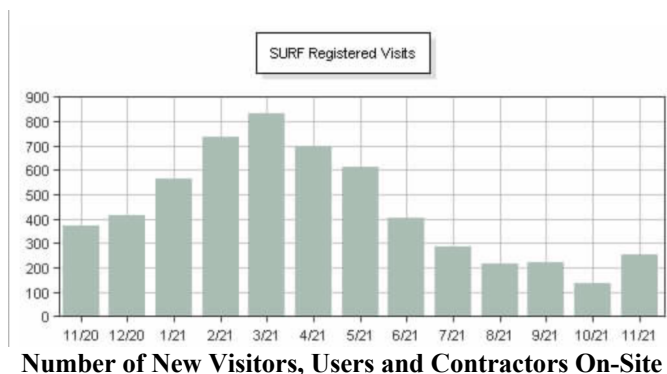
- Resolved e-911 failure between SDSTA private branch exchange (PBX) phone system and Midco.
- Recovered and secured the PBX's voicemail virtual processing environment.
- Deployed isolated network/systems to support and secure the physical access control system.
- Contained an Incident response successfully and mitigated an Office 365 Nigerian account breach.
- Provided essential support during contractor transition for a new printer managed services contract with Marco.
- Ongoing IT assistance provided Fermilab’s subcontractors with deployment of radio communications and remote access in support of the raisebore project on the 3650L and 4850L.
- Provided temporary connectivity to TMI for the company's office automation needs.
- Continued MS Teams deployment.
- Successfully engineered, deployed 1700L Rehabilitation Project.
- Continued effort promulgating a statement of work for a new SURF phone system.

### **Daily Activities**

In addition to work order activity, IT monitors and reviews wireless and general network activity and counts, network hardware readiness, VPN Remote Access logs, Firewall logs, and establishes new VPN and DocuShare accounts for individuals and user groups, as requested.

## **September – November 2021 Events**

- The Administrative Services team registered 612 visits September 1 through November 30. Access badge requests continued to be processed and monthly badging reports distributed.
- The Visitor Registration Monthly Reports were submitted electronically to the SD Fusion Center/Homeland Security utilizing the SURF database reporting tool.
- The Monthly SURF Foreign National Visits Reports and Restricted Party Screening Audits were generated and distributed.



## Administrative Services Activities

- On August 9, Amanda Berry started as the new Laboratory Receptionist and the Administrative Services team provided onboarding and training. Purchase orders were invoiced and closed in ManagerPlus; monthly office supply orders were received and sorted; documents were scanned and laminated for various departments; access badges were printed and tracked; monthly reports uploaded to DocuShare; breakroom and espresso machine regularly cleaned; conference rooms for staff members were scheduled; assisted E&O with teaching project for students.
- On September 4, Amelia Pearson transitioned full-time to her new role as Administrative Support to the ESH Department. Amelia is also the backup receptionist and continues to report under Mandy's supervision. Along with staffing the front desk during receptionist leave, monthly Researcher hours were tracked and Science training records entered; purchase orders were invoiced and closed in ManagerPlus; safety waivers were logged in the ESH database; logistics was provided for the Environment, Safety & Health Advisory Committee (ESHAC) meeting; tracking incidents continued and reports were filed; locker assignments continue to be managed for SDSTA employees, users and contractors; assisted with evacuation drill exercises; continued to assist with adding new users into Bridge, the learning management system.
- Administrative Assistant Natasha Wheeler continued to assist ESH to review SURF Bridge training courses and review ESH Chapters; assisted QA/QC to review ISO documents; recorded board meeting minutes for SDSTA and SURFF boards' quarterly meetings; posted daily status update recordings; and continued to serve as occasional backup to front desk reception. Natasha continued to provide administrative support to the SURF Foundation Director Staci Miller.
- Administrative Services Manager Mandy Knight continued to assist with the Entrepreneurial Operating System (EOS) workshops with EOS Implementor Mike Roth and the SDSTA Executive Leadership team. The EOS quarterly summit planned at SURF on October 13 was conducted virtually via Zoom due to a snow storm. The next quarterly planning summit is scheduled onsite January 4, 2022. Administrative and logistical support were provided for the September 8-11 LZ Collaboration meeting, October 20 SURF All Hands meeting and the September 29-October 1 ESHAC Meeting. Work began with the Communications Department to design new badges and visitor cards for the new C-CURE 9000 badging system/access control system. Also, 13 new department organization charts were created and formatted as ISO-controlled documents — the charts will be submitted to the SURF Change Control Board in December for approval. The Administrative Services team continues to scribe for several SURF weekly department leadership meetings (L10s).
- An SDSTA Board of Directors Telephonic Special Board meeting was held on September 17 to approve a Oro Hondo backup fan contract. Board material and meeting minutes were posted to the Boards & Commissions portal. Preparations began for the regularly scheduled quarterly meeting of the SDSTA Board of Directors on December 16. The SDSTA internal ethics hotline has been eliminated since Lighthouse Services, a paid third party service, monitor calls and provides reports to Mike Headley, Bill Kelly and Pat Lebrun, as needed. SDSTA Policy & Procedures is being updated to reflect this change.

**SURF FOUNDATION**  
**501(c)(3)**

## **SURF Foundation Status**

### **Work Accomplishments**

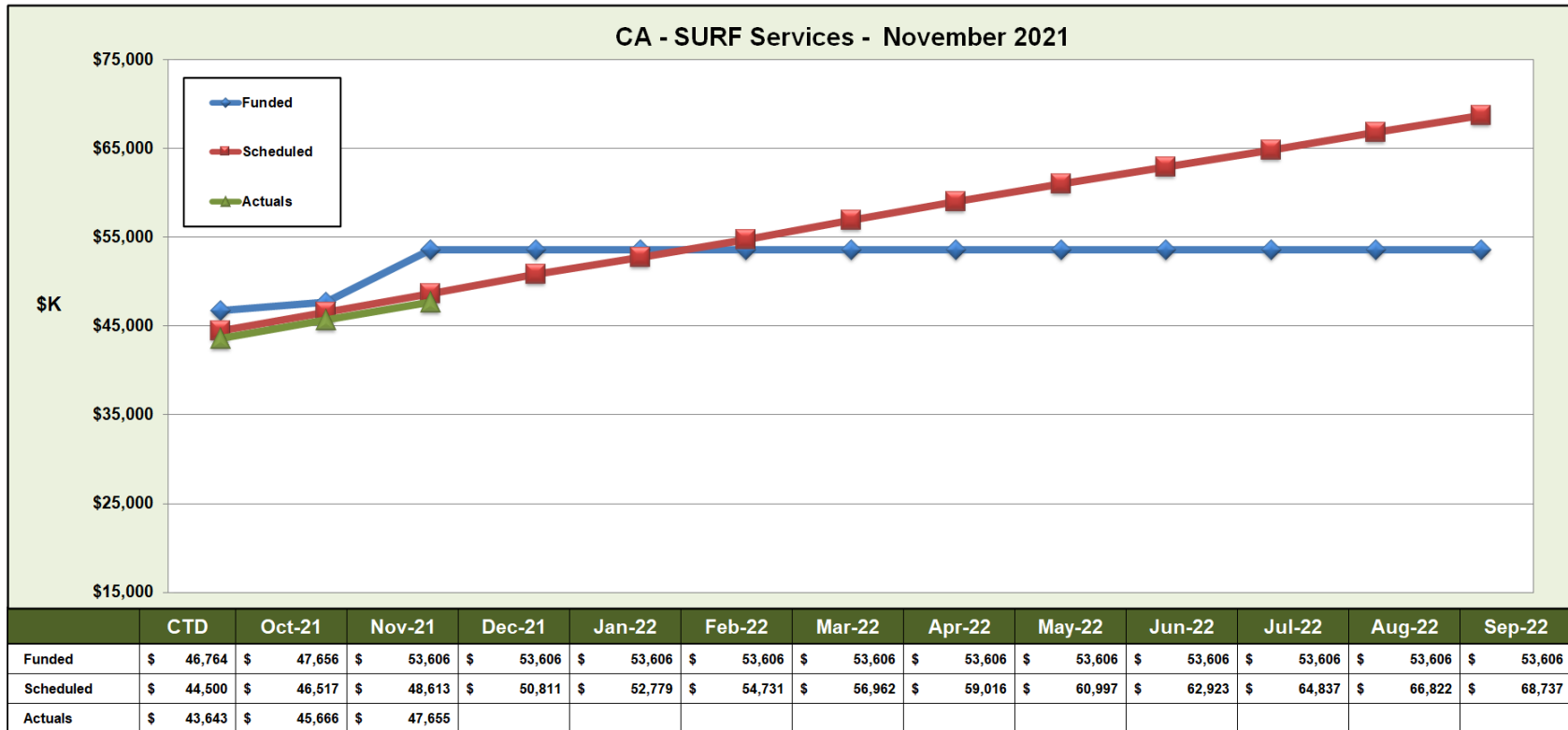
- Three new SURFF board members were appointed at the SDSTA board of directors meeting in September. Board member orientations were completed in November.
- Sacred Circle Garden Campaign:
  - Limited Edition prints were introduced to the public.
  - The campaign continues with a total of \$427,869.73 raised as of December 1, 2021.
  - Two grants were written for a total amount of \$65,000.
- Donor update:
  - The donor retention rate is at 72% compared to the national average of 43% as of December 1, 2021.
  - The number of donors from January 2020 to December 2020 was 47 and from January 2021 to December 2021 was 89—an increase of 42 donors.
- Giving Tuesday:
  - The campaign raised \$11,562.86 with 89% being new donors.
  - Two Board members provided videos of support for Giving Tuesday, 70% of the Board donated to Giving Tuesday and 90% of the board has donated to SURFF as of December 1, 2021.
  - On November 30, SURFF hosted an employee appreciation breakfast, incorporating Giving Tuesday.
- SURFF Director Staci Miller spent three days in Sioux Falls and presented to the Rotary Club west, the Rotary Club north and met with multiple potential donors.
- SURFF collaborated with the SDSTA Communications Department to establish a nationwide marketing strategy.
- SURFF continues to ensure IDEA is built into all aspects of its daily work.
- The donor stewardship matrix has been followed with thank you phone calls, handwritten thank you notes, 30-day and quarterly impact letters as well as donor-versary letters being sent to all donors.
- SURFF 1-, 3- and 15-year goals were established in EOS.
- The fall annual appeal letter was sent to 241 constituents.
- The year-end report was submitted for the Vucurevich grant.
- SURFF hosted “From the Underground Up”—a combined live and virtual coffee hour to build employee engagement.
- SURFF received GuideStar’s highest level of recognition—the Platinum Seal of Transparency.

### **Upcoming Activities**

- The planning of the donor recognition event is underway.
- The planning of the employee giving campaign is underway.

## **APPENDIX**

**Business Services Department  
Appendix A**



**DOE SDSTA Fiscal Year 2021 SPA Curve**

Page intentionally  
blank



DIVISION: ALL

BALANCE SHEET

## ASSETS

AS OF  
11/30/21

## CURRENT ASSETS

First Interstate Checking	\$	5,830,998.16
Total in Local Checking		5,830,998.16
SD Treas: Indemnification		7,500,000.00
SD Treas: Mine Closure		1,520,425.48
SD Treas: Operating		1,304,075.96
SD Treas: Sanford Gift #2		6,569.97
SD Treas: Experiments		869,081.53
Total with SD Treasurer		11,200,152.94
Billed A/R		2,192,785.07
Unbilled A/R		808,109.72
Other A/R		261,200.32
Inventory - Supplies		3,166,193.57
Inventory - Warehouse		258,766.03
Other Current Assets		584,483.85
Total Current Assets		24,302,689.66

## FIXED ASSETS

Land, Underground & Other	12,633,473.13
Bldgs & Infrastructure	15,592,844.49
Improvements	62,813,135.62
Computer Equipment	354,677.81
Equipment & Fixtures	10,857,104.77
DOE Property Transfer	4,164,914.91
Accum Depr & Amort	(20,622,103.29)
DOE Prop. Accum Deprec.	(310,868.52)
Total Fixed Assets	85,483,178.92

## OTHER ASSETS

Work in Process	-
Pension Deferred Outflows	4,135,812.00
Xenon Purchased	8,934,350.39
Total Other Assets	13,070,162.39

## TOTAL ASSETS

=====

\$ 122,856,030.97

=====

DIVISION: ALL

## BALANCE SHEET

## LIABILITIES &amp; EQUITY

		AS OF 11/30/21
		<hr/>
CURRENT LIABILITIES		
Accounts Payable	\$	1,398,909.92
Other Payables		8,255.00
		<hr/>
Total Accounts Payable		1,407,164.92
Accrued Payroll Liab		2,354,885.56
		<hr/>
Total Current Liabilities		3,762,050.48
OTHER LIABILITIES		
LT Xenon Notes Payable		6,000,000.00
Pension Deferred Inflows		3,467,898.62
		<hr/>
Total Other Liabilities		9,467,898.62
EQUITY		
Restricted: Indemnificati		7,500,000.00
Restricted: Mine Closure		1,520,425.48
Restricted: Sanford Gift2		6,569.97
Restricted: Pension		667,913.38
Restricted: Experim. Int.		869,081.53
Restricted: Foundation		25,000.00
		<hr/>
Total Restricted Funds		10,588,990.36
Investment in Gen FA		85,483,178.92
Unrestricted Funds		13,553,912.59
		<hr/>
Total Equity		109,626,081.87
		<hr/>
TOTAL LIABILITIES & EQUITY	\$	122,856,030.97
		<hr/>

ALL

## STATEMENT OF INCOME

FOR THE PERIOD ENDING 11/30/21

	YR-TO-DATE
REVENUE	
DOE Subcontracts	\$ 14,474,198.40
NSF/NASA Subcontracts	-
State Revenue	-
Checking Interest	860.58
Interest Income	46,646.00
	-----
TOTAL REVENUE	14,521,704.98
DIRECT COSTS	
Direct Labor	3,629,110.41
Board of Directors	2,849.84
Capital Outlay >\$5K	871,232.86
Contractual Svcs	1,795,717.49
Inventory	107,328.32
Supplies	1,022,791.94
Travel - Domestic	23,941.23
Travel - Foreign	-
Utilities	821,568.01
Other Direct Costs	55,462.11
Unallow/Unbill Costs	163,245.99
	-----
TOTAL DIRECT COSTS	8,493,248.20
INDIRECT COSTS	
Fringe Benefits	2,819,823.31
Overhead	3,701,095.86
	-----
TOTAL INDIRECT COSTS	6,520,919.17
	-----
GROSS PROFIT/LOSS ( )FROM OPERATIONS	(492,462.39)
	-----
OTHER INCOME	
Water Treatment	151,813.17
Miscellaneous Income	44,749.01
Other Operating Income	161,822.17
	-----
TOTAL OTHER INCOME	358,384.35
OTHER EXPENSES	
Misc. Expenses & Donations	(2,439,923.29)
Loss (Gain) on Sale of FA	(3,335.29)
Other Unallowable Expense	134,746.52
Reclass Incr Net Assets	1,255,994.70
	-----
TOTAL OTHER EXPENSES	(1,052,517.36)
	=====
NET INCOME/LOSS ( )	\$ 918,439.32
	=====

DIVISION: ALL

## COMPARATIVE BALANCE SHEET

## ASSETS

	AS OF 11/30/21	AS OF 11/30/20	\$ CHANGE	% CHANGE
<b>CURRENT ASSETS</b>				
First Interstate Checking	\$ 5,830,998.16	\$ 3,414,962.21	\$ 2,416,035.95	70.75%
First Interstate Other	-	1,420.64	(1,420.64)	-100.00%
Total in Local Checking	5,830,998.16	3,416,382.85	2,414,615.31	70.68%
SD Treas: Indemnification	7,500,000.00	7,500,000.00	-	0.00%
SD Treas: Mine Closure	1,520,425.48	1,497,441.53	22,983.95	1.53%
SD Treas: Operating	1,304,075.96	1,116,445.61	187,630.35	16.81%
SD Treas: Sanford Gift #2	6,569.97	6,991.97	(422.00)	-6.04%
SD Treas: Spec Sess - Lab	-	3,065,433.00	(3,065,433.00)	-100.00%
SD Treas: Experiments	869,081.53	919,001.75	(49,920.22)	-5.43%
Total with SD Treasurer	11,200,152.94	14,105,313.86	(2,905,160.92)	-20.60%
Billed A/R	2,192,785.07	3,031,161.89	(838,376.82)	-27.66%
Unbilled A/R	808,109.72	823,126.23	(15,016.51)	-1.82%
Other A/R	261,200.32	780,575.00	(519,374.68)	-66.54%
Inventory - Supplies	3,166,193.57	2,703,681.20	462,512.37	17.11%
Inventory - Warehouse	258,766.03	28,256.08	230,509.95	815.79%
Other Current Assets	584,483.85	451,777.22	132,706.63	29.37%
Total Current Assets	24,302,689.66	25,340,274.33	(1,037,584.67)	-4.09%
<b>FIXED ASSETS</b>				
Land, Underground & Other	12,633,473.13	12,633,473.13	-	0.00%
Bldgs & Infrastructure	15,592,844.49	9,707,365.56	5,885,478.93	60.63%
Improvements	62,813,135.62	64,637,443.82	(1,824,308.20)	-2.82%
Computer Equipment	354,677.81	570,932.90	(216,255.09)	-37.88%
Equipment & Fixtures	10,857,104.77	10,980,544.67	(123,439.90)	-1.12%
DOE Property Transfer	4,164,914.91	927,771.27	3,237,143.64	348.92%
Accum Depr & Amort	(20,622,103.29)	(19,030,805.00)	(1,591,298.29)	8.36%
DOE Prop. Accum Deprec.	(310,868.52)	(36,930.31)	(273,938.21)	741.77%
Total Fixed Assets	85,483,178.92	80,389,796.04	5,093,382.88	6.34%
<b>OTHER ASSETS</b>				
Work in Process	-	1,795,774.00	(1,795,774.00)	-100.00%
Pension Deferred Outflows	4,135,812.00	2,995,814.75	1,139,997.25	38.05%
Xenon Purchased	8,934,350.39	8,934,350.39	-	0.00%
Total Other Assets	13,070,162.39	13,725,939.14	(655,776.75)	-4.78%
<b>TOTAL ASSETS</b>	<b>\$ 122,856,030.97</b>	<b>\$ 119,456,009.51</b>	<b>\$ 3,400,021.46</b>	<b>2.85%</b>

DIVISION: ALL

## COMPARATIVE BALANCE SHEET

## LIABILITIES &amp; EQUITY

	AS OF 11/30/21	AS OF 11/30/21	\$ CHANGE	% CHANGE
CURRENT LIABILITIES				
Accounts Payable	\$ 1,398,909.92	\$ 1,222,804.46	176,105.46	14.40%
Other Payables	8,255.00	6,586.24	1,668.76	25.34%
Total Accounts Payable	1,407,164.92	1,229,390.70	177,774.22	14.46%
Accrued Payroll Liab	2,354,885.56	2,171,132.79	183,752.77	8.46%
Total Current Liabilities	3,762,050.48	3,400,523.49	361,526.99	10.63%
OTHER LIABILITIES				
LT Xenon Notes	6,000,000.00	6,000,000.00	-	0.00%
Pension Deferred Inflows	3,467,898.62	1,266,585.88	2,201,312.74	173.80%
Total Other Liabilities	9,467,898.62	7,266,585.88	2,201,312.74	30.29%
TOTAL LIABILITIES	13,229,949.10	10,667,109.37	2,562,839.73	24.03%
EQUITY				
Restricted: Indemnificati	7,500,000.00	7,500,000.00	-	0.00%
Restricted: Lab	-	3,065,433.00	(3,065,433.00)	-100.00%
Restricted: Mine Closure	1,520,425.48	1,497,441.53	22,983.95	1.53%
Restricted: Sanford Gift2	6,569.97	6,991.97	(422.00)	-6.04%
Restricted: Pension	667,913.38	1,729,228.87	(1,061,315.49)	-61.38%
Restricted: Experim. Int.	869,081.53	539,608.25	329,473.28	61.06%
Restricted: Foundation	25,000.00	219.45	24,780.55	11292.12%
Total Restricted Funds	10,588,990.36	14,338,923.07	(3,749,932.71)	-26.15%
Investment in Gen FA	85,483,178.92	80,389,796.04	5,093,382.88	6.34%
Unrestricted Funds	13,553,912.59	14,060,181.03	(506,268.44)	-3.60%
TOTAL EQUITY	109,626,081.87	108,788,900.14	837,181.73	0.77%
TOTAL LIABILITIES & EQUITY	\$ 122,856,030.97	\$ 119,456,009.51	\$ 3,400,021.46	2.85%

## COMPARATIVE STATEMENT OF INCOME

FOR THE PERIOD ENDING 11/30/21

	YEAR TO DATE	PRIOR YEAR TO DATE	\$ CHANGE	% CHANGE
REVENUE				
DOE Subcontracts	\$ 14,474,198.40	\$ 14,566,304.22	\$ (92,105.82)	-0.63%
NSF/NASA Subcontracts	-	1,665.52	(1,665.52)	-100.00%
State Revenue	-	-	-	0.00%
Checking Interest	860.58	547.03	313.55	57.32%
Interest Income	46,646.00	61,589.00	(14,943.00)	-24.26%
TOTAL REVENUE	14,521,704.98	14,630,105.77	(108,400.79)	-0.74%
DIRECT COSTS				
Direct Labor	3,629,110.41	3,358,417.61	270,692.80	8.06%
Board of Directors	2,849.84	1,845.28	1,004.56	54.44%
Capital Outlay >\$5K	871,232.86	1,427,938.67	(556,705.81)	-38.99%
Contractual Svcs	1,795,717.49	1,976,683.66	(180,966.17)	-9.16%
Inventory	107,328.32	66,195.05	41,133.27	62.14%
Supplies	1,022,791.94	470,269.36	552,522.58	117.49%
Travel - Domestic	23,941.23	1,283.40	22,657.83	1765.45%
Travel - Foreign	-	-	-	0.00%
Utilities	821,568.01	913,241.96	(91,673.95)	-10.04%
Other Direct Costs	55,462.11	12,964.21	42,497.90	327.81%
Unallow/Unbill Costs	163,245.99	119,626.18	43,619.81	36.46%
TOTAL DIRECT COSTS	8,493,248.20	8,348,465.38	144,782.82	1.73%
INDIRECT COSTS				
Fringe Benefits	2,819,823.31	2,725,441.13	94,382.18	3.46%
Overhead	3,701,095.86	3,736,900.84	(35,804.98)	-0.96%
TOTAL INDIRECT COSTS	6,520,919.17	6,462,341.97	58,577.20	0.91%
GROSS PROFIT/LOSS ( )	(492,462.39)	(180,701.58)	(311,760.81)	517.81%
OTHER INCOME				
Water Treatment	151,813.17	156,205.19	(4,392.02)	-2.81%
Miscellaneous Income	44,749.01	8,436.33	36,312.68	430.43%
Other Operating Income	161,822.17	13,677.16	148,145.01	1083.16%
TOTAL OTHER INCOME	358,384.35	178,318.68	180,065.67	100.98%
OTHER EXPENSES				
Misc. Expenses & Donations	(2,439,923.29)	(918,446.89)	(1,521,476.40)	165.66%
Loss (Gain) on Sale of FA	(3,335.29)	44,778.00	(48,113.29)	-107.45%
Other Unallowable Expense	134,746.52	36,930.31	97,816.21	264.87%
Reclass Incr Net Assets	1,255,994.70	(316,002.24)	1,571,996.94	-497.46%
TOTAL OTHER EXPENSES	(1,052,517.36)	(1,152,740.82)	100,223.46	-8.69%
NET INCOME/LOSS ( )	\$ 918,439.32	\$ 1,150,357.92	\$ (231,918.60)	-20.16%

**South Dakota Science & Technology Authority**  
**Available Resources**  
**11/30/2021**

Cash Total Checking	\$ 5,830,998
Cash With State Treasurer	<u>\$ 11,200,153</u>
Total Cash	\$ 17,031,151
Less: Restricted Funds	
Indemnification/Mine Closure/Special Session Lab	\$ (9,020,425)
Experiments (Xenon, Interest, Infrastructure)	<u>\$ (869,082)</u>
Total Cash Available for Infrastructure Upgrades and Authority Operations	\$ 7,141,644
Plus: Accounts Receivable Billed	\$ 2,192,785
Accounts Receivable Unbilled	\$ 808,110
Less: Current Liabilities (Accounts Payable & Accrued Payroll)	<u>\$ (3,762,050)</u>
(not including accts. pay. For MSF funding)	
Available Cash and Receivables	<u><u>\$ 6,380,488</u></u>

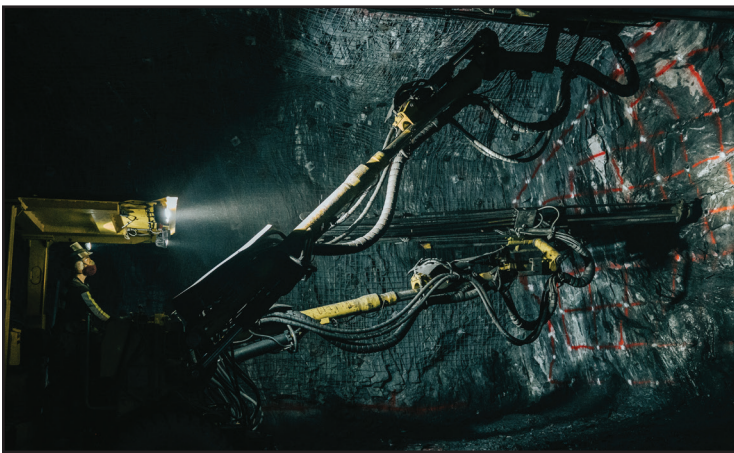
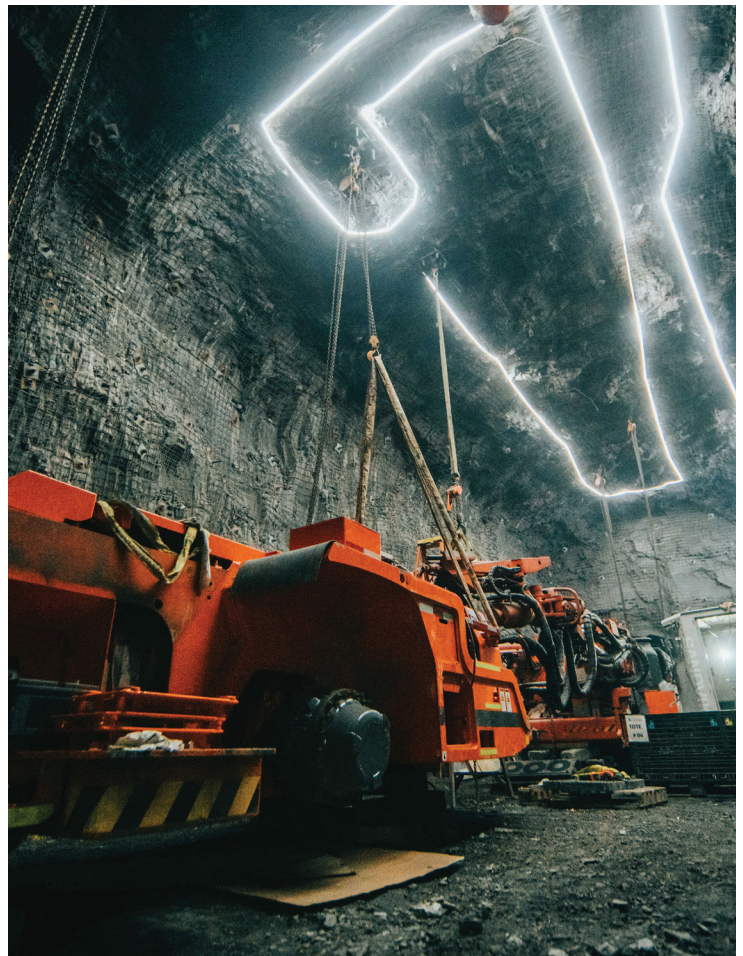
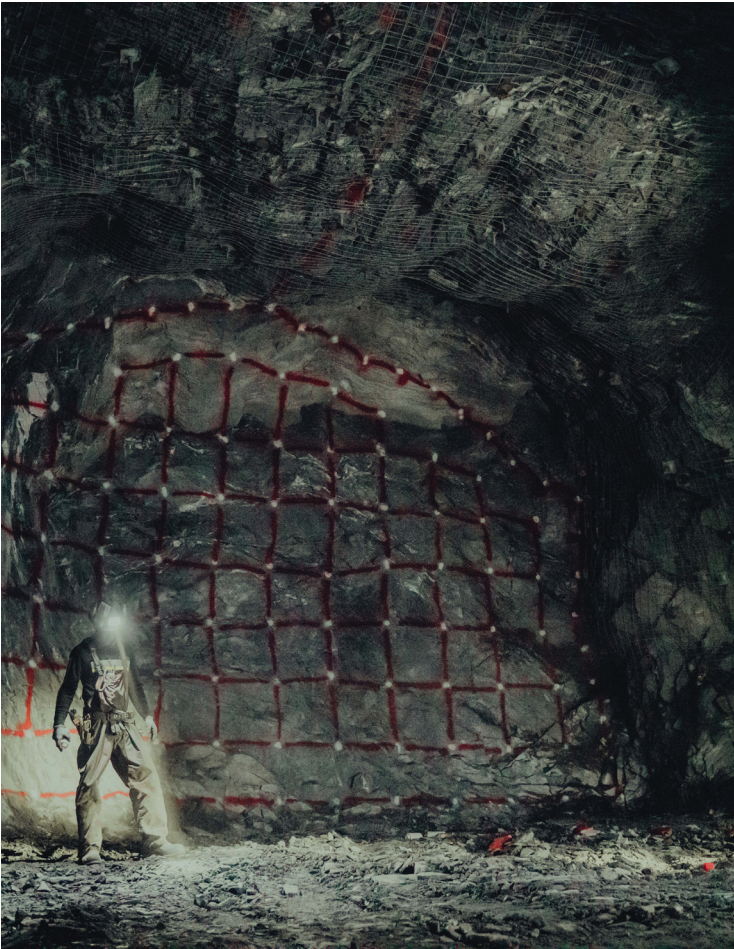
# SDSTA Operating Budget Summary FY2022

Actual vs Budget  
November 2021 & YTD

	Nov. 2021	Budget	\$ Over/Under Budget	% of Budget	Actual YTD	YTD Budget	\$ Over/Under Budget	% of Budget	% Remaining
									100%
SDSTA (Authority) Direct Charges									
Board of Directors	\$21,196.00	\$21,333.00	\$137.00	99.36%	\$101,764.00	\$106,665.00	\$4,901.00	95.41%	4.59%
Executive Office	\$58,411.00	\$74,825.00	\$16,414.00	78.06%	\$622,488.00	\$500,850.00	-\$121,638.00	124.29%	-24.29%
Science Center E & O	\$550.00	\$550.00	\$0.00	100.0%	\$46,428.00	\$49,250.00	\$2,822.00	94.27%	5.73%
Science Liaison	-\$330.00	\$0.00	\$330.00	100.0%	\$356.00	\$0.00	-\$356.00	100.00%	0.00%
Subtotal	\$79,827.00	\$96,708.00	\$16,881.00	82.54%	\$771,036.00	\$656,765.00	-\$114,271.00	117.40%	-17.40%
Federal/State Funding - Direct Charges									
Fermi C#671265 Prof. St.Services	\$6,446.00	\$8,000.00	\$1,554.00	80.58%	\$22,655.00	\$33,000.00	\$10,345.00	68.65%	31.35%
Fermi C#674969 Ross Logist.Supp.	\$211,114.00	\$275,000.00	\$63,886.00	76.77%	\$1,086,513.00	\$1,625,000.00	\$538,487.00	66.86%	33.14%
Fermi Misc. Contracts	\$347.00	\$5,000.00	\$4,653.00	6.94%	\$827.00	\$25,000.00	\$24,173.00	3.31%	96.69%
Office of Science Coop.Agree	\$1,274,748.00	\$1,347,342.00	\$72,594.00	94.61%	\$6,363,253.00	\$6,242,041.00	-\$121,212.00	101.94%	-1.94%
Office of Science IIP Projects	\$659,129.00	\$659,129.00	\$0.00	100.0%	\$1,530,408.00	\$1,530,408.00	\$0.00	100.00%	0.00%
LBNL SIGMA-V C#7371823	\$34,810.00	\$50,000.00	\$15,190.00	69.62%	\$132,360.00	\$160,000.00	\$27,640.00	82.73%	17.28%
LBNL LZExp.Operat.C#7525117	\$40,689.00	\$45,000.00	\$4,311.00	90.42%	\$203,448.00	\$255,000.00	\$51,552.00	79.78%	20.22%
MJD (Majorana) ORNL144149	\$1,162.00	\$2,000.00	\$838.00	58.1%	\$6,365.00	\$10,000.00	\$3,635.00	63.65%	36.35%
* Kiewit/Thyssen/DakotaT.	\$2,204.00	\$4,000.00	\$1,796.00	55.1%	\$15,283.00	\$20,700.00	\$5,417.00	73.83%	26.17%
RESPEC Thermal Breakout	\$0.00	\$4,000.00	\$4,000.00	0.0%	\$11,522.00	\$22,000.00	\$10,478.00	52.37%	47.63%
Subtotal	\$2,230,649.00	\$2,399,471.00	\$168,822.00	92.96%	\$9,372,634.00	\$9,923,149.00	\$550,515.00	94.45%	5.55%
Indirect Expenses									
Indirect Charges Personnel	\$427,190.00	\$566,863.00	\$139,673.00	75.36%	\$2,214,147.00	\$2,498,071.00	\$283,924.00	88.63%	11.37%
Indirect Charges Other	\$465,796.00	\$523,259.00	\$57,463.00	89.02%	\$2,287,964.00	\$2,674,315.00	\$386,351.00	85.55%	14.45%
Subtotal	\$892,986.00	\$1,090,122.00	\$197,136.00	81.92%	\$4,502,111.00	\$5,172,386.00	\$670,275.00	87.04%	12.96%
Totals	\$3,203,462.00	\$3,586,301.00	\$382,839.00	89.33%	\$14,645,781.00	\$15,752,300.00	\$1,106,519.00	92.98%	7.02%
* Private Corporations (Commercial Group)									



## Communications Department Photo Appendix C



*Top left: A worker stands in front of a rock face that has been prepared for drilling at the 4850 Level.*

*Top right: A piece of excavation equipment on the 4850 Level. Too large to fit in the shaft, it was delivered in pieces and reassembled underground.*

*Center left: A double-boom jumbo drill is used to make holes in the rock face.*

*Center right : Fermilab engineer James Rickard explains the excavation process at the November Deep Talks.*

*Bottom right: Working Wellness team members, Michelle Andresen and Laura Baatz load food donations into the bed of a pick-up truck.*





## Communications Department Photo Appendix C



*Top: Early morning aerial photo of the Ross and Yates shafts.*

*Center left: Emergency Response Team members practice a rope rescue.*

*Center right: SDSTA Research Scientist Markus Horn co-hosts Deep Talks: Dark Matter Day.*

*Bottom: Leekyung Kang, SURF 2021 Artist-in-Residence paints a piece inspired by SURF on a wall.*

